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Crystallization kinetics of poly(lactic acid)-talc composites / Battegazzore, Daniele; Bocchini, Sergio; Frache, Alberto. - In: EXPRESS POLYMER LETTERS. - ISSN 1788-618X. - ELETTRONICO. - 5:10(2011), pp. 849-858.
[10.3144/expresspolymlett.2011.84]

Availability:

This version is available at: 11583/2404255 since:

Publisher:

Budapest University of Technology and Economics

Published

DOI:10.3144/expresspolymlett.2011.84

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Crystallization kinetics of poly(lactic acid)-talc composites

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Received 18 February 2011; accepted in revised form 5 April 2011

Abstract. The crystallization kinetics of poly(lactic acid) / talc composites were determined over a range of 0 to 15 wt% of talc. Talc was found to change the crystallization kinetics. The presence of talc increases the crystallization rate and this increase is related to talc concentration and to crystallization temperature. In order to understand the effect of talc and PLA crystallinity on mechanical properties, dynamic mechanical thermal analyses were performed on poly(lactic acid) / talc composites before and after an annealing process. It was demonstrated that the presence of crystals improves thermo-mechanical properties but in order to achieve good results at high temperatures the reinforcing effect of a filler such as talc is necessary.

Keywords: thermal properties, crystallization, polylactic acid, mechanical properties, polymer composites

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